CONNECT-IP

draft-cms-masque-connect-ip-00

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CONNECT-IP

- Allows endpoints to set up an IP tunnel between one another

- This can be used to implement:
  - A consumer VPN
  - A point-to-point IP tunnel (e.g., overlay mesh)
  - A point-to-network IP tunnel (e.g., corporate VPN)
  - A network-to-network IP tunnel (e.g., Site-to-Site VPN)

- Use-cases detailed in draft-ietf-masque-ip-proxy-reqs-01

Messages

IP_PACKET

- Allows conveying IP Packets when HTTP/3 Datagrams are not available.

```
IP_PACKET Message {
  IP Packet (...),
}
```

- Where '`IP Packet`' is full IP packet, from the IP Version field until the last byte of the IP Payload.

ADDRESS_REQUEST & ADDRESS_ASSIGN

- `ADDRESS_REQUEST`: used to request an IP address

```
ADDRESS_REQUEST Message {
  IP Version (8),
  IP Address (32..128),
  IP Prefix Length (8),
}
```

- `ADDRESS_ASSIGN`: used to assign an IP address to the peer

```
ADDRESS_ASSIGN Message {
  IP Version (8),
  IP Address (32..128),
  IP Prefix Length (8),
}
```

ROUTE_ADVERTISEMENT, ROUTE_REJECTION, ROUTE_RESET

- ROUTE_ADVERTISEMENT: Informs peer it's willing to route traffic to prefix.

```
ROUTE_ADVERTISEMENT Message {
  IP Version (8),
  IP Address (32..128),
  IP Prefix Length (8),
}
```

- ROUTE_REJECTION message allows an endpoint to communicate to its peer that it is not willing to route traffic to a given prefix. Message body is identical to ROUTE_ADVERTISEMENT

- ROUTE_RESET message allows an endpoint to cancel any routes it had previously advertised or rejected.

ATOMIC_START & ATOMIC_END

- `ATOMIC_START`: used to begin a series of atomic set of messages.

```
ATOMIC_START Message {
}
```

- `ATOMIC_END`: used to end a series of atomic set of messages.

```
ATOMIC_END Message {
}
```

SHUTDOWN

- SHUTDOWN: used to indicate to peer that the endpoint is closing the CONNECT-IP stream, with a string explaining the reason for the shutdown.

```
SHUTDOWN Message {
  Reason Phrase (..),
}
```

Extensibility

CONNECT-IP Extensibility

- Two main extension mechanisms
  - HTTP Headers
  - Stream Chunk types
- Possible extensions
  - DNS servers as a Stream Chunk
  - Authentication/Authorization data as an HTTP Header
  - IP Payload sent as new flow ID
    - Stream Chunk to configure flow ID, set up IP headers

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